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REPORT TO THE CONGRESS

**Opportunity For Savings by
Consolidating Photographic
Operations At The
John F. Kennedy Space Center
And The Air Force Eastern
Test Range** H-1.8.62

National Aeronautics and Space
Administration and
Department of Defense

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

The General Accounting Office **has** reviewed the establishment and operation of photographic facilities at the National Aeronautics and Space Administration's John F. Kennedy Space Center and the Air Force's Eastern Test Range, both located near Cocoa Beach, Florida. This report presents our finding that consolidation of the photographic operations of the two facilities is feasible and that considerable savings can be achieved each year through such action.

The photographic services discussed in this report relate to those required to provide coverage of launch operations. Specifically, the photographic services provide highly accurate data on position, attitude, velocity, and acceleration of missiles and space vehicles; record sequences of events during missile and space vehicle tests; and provide photographs of all phases of missile and space vehicle programs for public information releases and general historical records. During calendar year 1966, contractor employees provided these services to the Eastern Test Range and the Kennedy Space Center at a cost of about \$6 million.

A 1963 agreement between the Department of Defense and the National Aeronautics and Space Administration delineated the technical and geographical areas of responsibility of the two agencies for photographic coverage at the Test Range and the Space Center and provided for their coordinated effort to avoid or minimize duplication of services. Although the agreement apparently contemplated that some degree of duplication might occur, it appears to us that the photographic capability subsequently developed by the Space Center duplicates to a great extent the preexisting capability of the Test Range.

Although we were not able to estimate, with reasonable accuracy, the potential savings to result from consolidating photographic operations of the two facilities, we believe that such savings would be significant. This conclusion is supported by (1) our analyses of contractor staffing and equipment utilization, (2) evaluations by Air Force officials directly connected with the photographic operations, and (3) corroborating statements by the two contractors providing photographic services.

We have therefore proposed that the Secretary of Defense and the Administrator, National Aeronautics and Space Administration, appoint a special group to review the photographic requirements and capabilities of both installations for the purpose of determining the most efficient and economic arrangement possible, notwithstanding earlier agreements,

In line with our proposal, both agencies agreed to initiate a joint review of the photographic operations at the two installations to determine the most efficient and economical method of acquiring photographic services. In addition, the National Aeronautics and Space Administration advised us that it would reexamine other support areas with the Air Force in an attempt to obtain both operational responsiveness and economy.

We are bringing this matter to the attention of the Congress because of the savings which we believe would result from consolidating photographic operations at the John F. Kennedy Space Center and the Air Force Eastern Test Range.

Copies of this report are being sent to the Director, Bureau of the Budget; the Secretary of Defense; the Secretary of the Air Force; and the Administrator, National Aeronautics and Space Administration.



Comptroller General
of the United States

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REPORT ON
OPPORTUNITY FOR SAVINGS BY
CONSOLIDATING PHOTOGRAPHIC OPERATIONS
AT THE JOHN F. KENNEDY SPACE CENTER
AND THE AIR FORCE EASTERN TEST RANGE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
AND DEPARTMENT OF DEFENSE

INTRODUCTION

The General Accounting Office **has made** a review of the establishment and operation of photographic facilities at the John F. Kennedy Space Center (KSC) of the National Aeronautics and Space Administration (NASA) and the Air Force Eastern Test Range (AFETR) of the Department of Defense (DOD), both located in the vicinity of Cocoa Beach, Florida. Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53); the Accounting and Auditing Act of 1950 (31 U.S.C. 67); and the authority of the Comptroller General to examine contractors' records, **as set forth** in contract clauses prescribed by the United States Code (10 U.S.C. 2313 (b)).

We initiated a review of photographic operations because **our** preliminary inquiries showed that KSC was substantially expanding its photographic capability, even though **AFETR** appeared to have adequate capability to accommodate KSC photographic requirements. **Our** review included an examination of DOD-NASA agreements, agency and contractor records, and discussions with officials of KSC, AFETR, and the contractors providing photographic services to the two installations.

Our review did not cover the manner in which the photographic support contractors for KSC and AFETR **were carrying out** their respective operations, nor did it encompass other activities of the two agencies. Neither did our examination include consideration of the possible alternative of performance by civil service employees of the functions presently being performed under contract.

The principal officials of the National Aeronautics and Space Administration, Department of Defense, and Department of the Air Force responsible **for** the administration of activities discussed in this report are listed in appendix I.

BACKGROUND

The Air Force Eastern Test Range, established in 1949 as the Joint Long Range Proving Ground to support missile test programs of the Department of Defense, extends from Cape Kennedy to the Indian Ocean and includes facilities and equipment for launching and tracking missile and space vehicles. Since 1958, AFETR has also provided support for space programs of the National Aeronautics and Space Administration.

The John F. Kennedy Space Center, so named in November 1963, was established in July 1960 as the Launch Operations Directorate under NASA's George C. Marshall Space Flight Center at Huntsville, Alabama, and it became an independent NASA center in July 1962. KSC plans and directs launch operations for NASA's manned and unmanned space vehicles launched in the Cape Kennedy area. KSC is located on Merritt Island, which is adjacent to AFETR facilities on Cape Kennedy.

Both AFETR and KSC have prime contractors which provide support services, directly or through the use of subcontractors. Photographic services for the two installations are provided by subcontractors which use Government-furnished equipment and facilities. The term "contractor" as used in this report represents prime and subcontractors,

AFETR has established and equipped a photographic laboratory and has acquired the necessary camera equipment to support range users. Facilities for overhaul and maintenance of the photographic equipment have also been provided. Most of AFETR's present photographic facilities were established in 1957 and 1958 to meet expanding missile test program requirements,

The photographic facilities and equipment used in AFETR's photographic operations are located at Patrick Air Force Base, at Cape Kennedy, at Merritt Island, at instrumentation stations on the range, and aboard instrumented ships and aircraft.

Prior to 1964, KSC relied primarily on AFETR and its contractor for photographic services. In January 1964, RSC entered into a contract for support services which included provision for photographic support and the operation of KSC photographic facilities and equipment. Since that date, KSC has periodically expanded its photographic facilities at Merritt Island and Cape Kennedy. A map of KSC and AFETR

installations, **showing** the location **of principal photographic facilities**, is included as appendix II.

During calendar year 1966, contractor employees provided photographic services to AFETR and KSC at a level of effort of about 330 and 140 man-years, respectively, and at a combined cost of about \$6 million. The cost of Government-furnished photographic equipment and facilities, at December 31, 1966, was about \$14.5 million for AFETR and about \$2 million for KSC.

The three principal types of photographic coverage--metric, engineering sequential, and documentary--required in connection with Launch operations are explained below.

Metric photography provides highly accurate data on position, attitude, velocity, and acceleration of missiles and space vehicles. The film is used to evaluate flight performance of vehicles through a comparison of in-flight trajectory data recorded by the metric cameras with the intended flight trajectory data.

Engineering sequential photography is the recording of sequences of events, during missile and space vehicle tests, for engineering study of the occurrence, nature, and duration of the events. Examples of some of the events are propellant ignition, support arm release, vehicle first motion, and vehicle separation.

Documentary photography, which may be still or motion picture, is performed primarily to provide photographs of all phases of missile and space vehicle programs for public information releases and general historical records. Public release includes those photographs furnished to news media, such as newspapers and television networks. Film for historical records is used for such purposes as historical briefings and report-type film productions.

NASA and DOD have, at various times, entered into agreements concerning the management of KSC and AFETR operations in the Cape Kennedy area. The agreements state that, as a general concept, operations should be under single management unless there are compelling technical or operational reasons for doing otherwise and that duplication should be avoided to the fullest extent possible. In connection with photographic operations, the agreements permit a divided responsibility; that is, AFETR performs certain types of photographic work in specified areas and KSC performs other types. The basic agreement, dated January 17, 1963, delineates the areas of responsibility of

DOD and NASA and provides for coordinated effort to avoid or minimize duplication. The following table shows the general division of responsibility as specified in the several agreements.

	<u>Merritt Island</u>	<u>Cape Kennedy</u>	
	NASA	NASA	BOD
	<u>launches</u>	<u>launches</u>	<u>launches</u>
Metric photography	AFETR	AFETR	AFETR
Engineering sequential photography	KSC	KSC and AFETR	AFETR
Documentary photography	KSC	KSC	AFETR

FINDING

OPPORTUNITY FOR SAVINGS BY CONSOLIDATING PHOTOGRAPHIC OPERATIONS

Under a 1963 agreement between DOD and NASA, provision is made for the technical and geographical areas of responsibility of DOD and NASA for photographic coverage and reproduction at AFETR and KSC and for coordinated effort to avoid or minimize duplication. Although the NASA-DOD agreement apparently contemplated that some degree of duplication might occur because of unusual circumstances, it appears to us that the photographic capability subsequently established by KSC duplicates, to a great extent, the already established AFETR capability. We believe that significant savings could be realized if the photographic capabilities of KSC and AFETR were consolidated.

The basic DOD-NASA agreement and subsequent implementing agreements between AFETR and KSC provide for the establishment and operation of separate facilities in situations where there are compelling technical or operational reasons; however, our review did not reveal any substantive evidence that KSC's operational and technical requirements were so demanding as to require the establishment of the significant duplicate photographic facilities and the associated manpower necessary for their operation. Officials at KSC were unable to provide us with the overall justification used to support the establishment of a photographic capability significantly greater than that which existed prior to 1964, when NASA began to significantly expand its capabilities.

Our conclusion, that a consolidated photographic operation to support both AFETR and KSC would be more efficient and economical than the existing dual operation, is supported by (1) our analyses of contractor staffing and equipment utilization, (2) evaluations by AFETR officials directly connected with the photographic operations, and (3) corroborating statements by the two contractors providing photographic services. Although we could not, on the basis of our review, independently determine an estimate of possible savings that might be realized if the photographic operations of KSC and AFETR were consolidated, both of the contractors providing such services estimated that annual savings could be as much as \$2 million.

Our finding was submitted to NASA and DOD for review, and their specific comments thereon are discussed in the report and included as appendixes III and IV.

Personnel and equipment capacity
in excess of requirements

Each support-service contractor is staffed and generally equipped to accommodate the peak workloads specified separately by AFETR and KSC. **Because** of the normal method of operating, the services of many technical personnel of the two support-service contractors are not **fully** utilized during periods between launchings. In our opinion, if only one contractor, staffed to meet peak workloads, were to provide the necessary photographic services to both installations, utilization of certain equipment and personnel could be greatly improved.

Early in our review, information came to our attention indicating that a single contractor could provide the required photographic services to KSC and AFETR more efficiently and economically than two contractors providing similar services. Accordingly, **we** made selective tests of the various photographic operations for the purpose of considering whether there **was** a potential **for** better utilization of facilities and contractor personnel.

Our analysis of utilization records showed that AFETR's motion picture laboratory was being used substantially below capacity during 1964 and 1965. Nevertheless, KSC established a new motion picture laboratory which became operational in October 1966. Some of the equipment for the KSC laboratory, such as two motion picture processors costing about \$183,000, **was** similar to AFETR equipment being operated below capacity.

The following table shows the production capacity and utilization of the motion picture laboratories for calendar years 1964 through 1966. The table is presented to illustrate simply the productive capacity and actual **usage** of the facilities. It should be recognized that, even under a consolidated operation, the disparity between capacity and usage would probably continue to be **Parge**, assuming that the contractor would still be required to be equipped to meet peak workload requirements. **As** noted by the agencies, these statistics do not conclusively demonstrate that short-term capacity was in excess of **peak** requirements. However, as shown on page 17, our analyses indicated that, even during **peak** workload periods, there was considerable unused capability.

	Number of feet		
	<u>Total</u>	<u>AFETR</u>	<u>KSC</u>
	(thousands)		
Annual production capacity	106,405	102,411 ^a	3,994 ^b
Actual production for calendar years			
1964	8,493	8,408	85
1965	8,741	8,710	31
1966	<u>7,429</u>	<u>7,135</u>	<u>294^c</u>
Total for 3 years	<u>24.663</u>	<u>24.253</u>	<u>410</u>
Three-year production capacity	<u>319,215</u>	<u>307.233</u>	<u>11.982</u>

^aThe laboratory was operated on a 2-shift basis because of the need for periodic services of the second shift,

^bRepresents the capacity prior to October 1966 when KSC laboratory facilities were expanded. The annual production capacity was increased to about 36.9 million feet on a 2-shift basis.

^cMost of the processing of film by KSC in 1966 occurred after the laboratory facilities were expanded in October. Production for the first 9 months of 1966 was 32,000 feet.

Equipment utilization is not the only factor to be considered in the justification for establishing or retaining photographic laboratories. However, utilization, coupled with consideration of costs for equipping and operating such facilities, and the availability of similar facilities that can provide the required capability appear to be prominent factors for consideration. Inasmuch as AFETR photographic laboratories were already providing substantial service to KSC and had an existing capacity for providing additional service, the decision to expand KSC motion picture laboratories appears to be questionable.

In July 1965, KSC's investment in photographic equipment was about \$367,000. Acquisition of additional equipment increased the total investment to about \$1.7 million at December 31, 1966. Similarly, the cost of contract services required to operate KSC photographic facilities have increased since award of the contract in January 1964, when 42 contractor employees were providing photographic services. The following table shows the number of contractor

employees providing services at the **close** of each contract year (January 14th) and the estimated **cost** of these services for contract years 1964 through 1966,

Contract year <u>ending</u>	Number of employees <u>at end of contract year</u>	Estimated contract cost (<u>note a</u>)
Jan. 14, 1965	81	\$ 717,000
" " , 1966	121	1,196,000
" " , 1967	155	\$1,775,000

^a Does not include prime contractor's general and administrative expenses and fee. These costs amounted to about \$127,000 for the contract year ended January 14, 1967.

Comparable employee and cost data were not readily available at **AFETR** for each of the 3 years shown above. During calendar year 1966, contractor employees provided photographic services to **AFETR** at a level of effort of about 330 man-years. The estimated annual cost was about \$4 million, including direct and indirect costs, According to **AFETR**, in comparison with the KSC total of 155 employees, the **AFETR**. direct photographic effort totaled 235 employees at December 31, 1966.

Analysis of the use of **staff** during two specific photographic assignments also indicated that one contract for consolidated photographic services would probably result in better utilization of personnel and a corresponding reduction in the cost to the Government. In both cases we noted that cameramen and supporting technicians of one contractor were working overtime at the same time that similar-type employees of the other contractor had nonproductive time. It seems that, because of the normal method of operating, better utilization of personnel could be obtained through a consolidation of photographic services.

We requested XSC to furnish us with studies, plans, and justifications which might have been prepared to support its decision to establish additional photographic laboratory capability at KSC, KSC officials advised us that the decision was made in 1963 and that such documentation was prepared but could not be Located, These officials advised us that KSC had established its own capability because **AFETR** was unable to meet its time and quantity requirements.

Although KSC could not furnish us with data supporting its initial decision, the written justifications for the procurement of KSC photographic laboratory equipment stated

that the equipment was needed to meet requirements for (1) delivering certain engineering and documentary items to NASA Headquarters and other NASA centers within 24 hours, (2) still pictures in sizes and quantities not permissible under AFETR regulations, and (3) additional sound-reproducing capability.

AFETR officials informed us that they had met in the past and could continue to meet KSC's immediate service requirements. For example, AFETR processed about 9,500 still-photography items to satisfy NASA's press release requirements for the Gemini 12 mission on November 11, 1966. In addition, our examination of KSC files to determine the extent of its documented complaints about the photographic services provided by AFETR showed that these complaints were minimal.

Regarding NASA assertions as to limitations on sizes and quantities of pictures, we were advised by AFETR officials that the applicable local regulations could be waived if the requesters adequately justified their requirements. They stated further that, in the past, these restrictions had been waived for NASA. In this regard, KSC's reliance on the possibly restrictive AFETR regulations as a justification for duplicating existing AFETR facilities and capabilities and AFETR's statement that the regulations could be waived if KSC would provide adequate justification therefor are, in our opinion, indicative of a need for greater cooperation between the two agencies.

Our review confirmed that AFETR's sound-recording capability was limited and insufficient to meet KSC's stated needs. However, we were advised that AFETR could have expanded its capability to satisfy these requirements. In any event, this is a relatively minor portion of the KSC photographic operation and is not, in our opinion, justification for the extensive duplication of facilities that now exists,

We therefore believe that the problems set forth in the justifications could have been satisfactorily resolved had AFETR and NASA attempted to coordinate their efforts to avoid or minimize duplication, which would have been in accordance with the explicit intention of NASA-DOD agreements for cooperation.

KSC/AFETR evaluations of
photographic operations

KSC and AFETR have recognized the possibility of duplication of effort, and various studies of the problem have been made. We reviewed the results of one such study completed in March 1966 which, in our opinion, did not accomplish its intended objective,

In a letter dated July 28, 1965, to the Director, KSC, *the* Commander, AFETR, in referring to the possibility of duplication of work in several areas and the possibility of a review of photographic services by the General Accounting Office, made the following suggestion:

"*** that we have the KSC/AFETR Advisory Group meet to identify areas that should be examined. Ad hoc teams, jointly staffed by our professionals, would be appointed by the Advisory Group to examine in detail and report on areas of possible duplication, with recommendations for effecting greater economy or more efficient operations. They should examine both our existing and proposed operations."

The Director, KSC, agreed to the aforementioned proposal in a letter dated August 9, 1965, and made the following statement to *the* Commander, AFETR:

"In order to prevent any possible misinterpretation by our staffs as to the purpose of these reviews, I suggest that we ask the Advisory Group to insure that the ad hoc groups do not get into the area of roles and missions, as these have been clearly established in the Webb-McNamara Agreement of 17 January 1963 and our implementing agreement of 9 March 1965. Studies of this nature would inevitably lead to friction which I know we both believe is unnecessary and should be avoided."

The ad hoc team for the study of photographic services was established November 10, 1965. The charter establishing the group contained the following objective and criteria, in part:

"2. Objective: To study and recommend the photographic service arrangements between AFETR and KSC (NASA) that offer maximum effectiveness at the least cost to the Government and assure minimum duplication between these activities.

"3. Criteria:

- * * * * *
- d. Basic KSC (NASA)/AFETR roles and missions as **defined in the DoD/NASA Agreement, 17 Jan 63, will be observed.**
 - e. The following will not be considered as restraints upon the **recommended** solution for optimum arrangements:
 - (1) Existing reimbursement policies.
 - (2) The existence of separate photographic **service contracts ***."**

The study report dated March 1, 1966, contained **schedules** showing **experienced and projected requirements for photographic services and made several recommendations concerning distribution of the work to obtain more balance in the workloads** of the two servicing organizations. In **essence**, it appears from the report that the **primary direction of the study** was to establish a somewhat better method of distributing the workload to the two contractors without disturbing the **status quo**. The report does not indicate that cost-effectiveness studies were **made** of alternatives to **the existing two-contract situation, such as a single contract approach for providing the necessary services.** There were no observations or recommendations concerning the cost of the **photographic services,**

In our opinion, the approach taken by the **study** group did not **result** in the attainment of **the objective of the study, which was to recommend arrangements that would be least costly to the Government and ensure minimum duplication.** In this regard, it appears that the KSC Director's August 9, 1965, letter mentioned above and **criteria item (d) in the ad hoc study team's charter, by requiring observance of existing roles and missions, may have effectively precluded an objective evaluation of the situation.**

Other data relating to feasibility of single contractor operation of photographic facilities

Other evidence that the photographic operations can be more efficiently operated at **less cost to the Government** includes (1) statements of responsible **AFETR officials directly connected with the operations,** (2) an unsolicited proposal by the **KSC photographic service contractor to provide service to AFETR at an amount substantially below the**

existing cost, and (3) statements made by both photographic service contractors.

In a memorandum to the AFETR Plans and Requirements Office, dated September 27, 1965, the AFETR Director of Range Operations, in commenting on duplication of effort, stated:

"Duplication of effort between the AFETR and NASA exists across the board in the photographic area. It is our opinion that one photographic contractor could provide all photographic services to both NASA and the ETR. *** In many instances, technicians from both photo units are engaged in concurrent and similar activities during test support, whereas one unit could accomplish these tasks efficiently without duplicate effort. The ETR has in existence a modern, well-equipped and staffed motion picture and still laboratory that can provide support for both NASA and the ETR. It is understood that NASA is in the process of developing a similar though somewhat smaller capability which will duplicate equipment and services already in existence at the ETR. However, it should be noted that the Webb-McNamara Agreement of 17 Jan 63 recognized the 'need' for certain 'quick look' and proprietary requirements by NASA, and is permissive with regard to duplication in both field and laboratory photographic areas." (Underscoring supplied)

In January 1967 another responsible AFETR range operations official, directly connected with photographic operations, advised us of his belief that the photographic operations of AFETR and KSC could be consolidated and that such an operation would result in significant savings,

Unsolicited proposal to provide photographic services at a reduced cost

An unsolicited proposal to provide photographic services to AFETR was submitted by the KSC photographic contractor on January 14, 1966. The contractor stated that, because of the contract with KSC, it could provide services to AFETR and the Government could realize the economic and operative benefits that would result from such things as improved utilization of technical personnel, more effective planning for the utilization of equipment and support personnel, advance scheduling of equipment repair and maintenance, and the ability to coordinate the workload and schedule the manpower more efficiently.

The contractor, in estimating the number of employees that would be necessary to provide service to AFETR, recognized that more detailed knowledge of workload would be necessary in order for a more precise estimate of staffing to be made. After consideration of this qualification, the estimate of cost, as computed by AFETR photographic officials, was about \$1.5 million less than the amount being paid by AFETR for photographic services. The estimated savings are not all inclusive in that the amount reflects only the reduction in manpower requirements needed to continue operation of both KSC and AFETR existing facilities. Additional savings should result from the consolidation of photographic laboratories and other photographic facilities.

AFETR files contained two evaluations, dated February 1 and 23, 1966, by AFETR officials who were of the opinion that the proposal was generally sound and worthy of further consideration. However, the contractor was advised by AFETR on May 19, 1966, that:

"We have thoroughly reviewed your proposal; however, we are not in a position to consider entering into a contract with your company at this time, for the services you propose, because we presently have a contract for such services and the contractor is meeting our needs and is performing very satisfactorily."

In September 1966 we discussed with the Director of Range Operations the two evaluations of the proposal made by his subordinates. It was his opinion that the proposal was not sound because it was evident that the contractor did not know enough about the extent of the work performed by AFETR since he had proposed to perform with 261 employees the work being done by the existing contractor with about 400 man-years of effort. Also, prior and subsequent to receipt of the proposal, the AFETR contractor had eliminated many unnecessary positions.

Even if the AFETR official's reasons were valid, the substantial savings which were indicated should have made evident the desirability of AFETR's requesting a firm proposal from the contractor which would have given full recognition to AFETR's photographic mission. A recommendation of this nature was made by one of the subordinate AFETR officials in the February 1, 1966, evaluation.

Contractors' comments

In October 1966 we interviewed officials of the two photographic service contractors to discuss the feasibility of a consolidated photographic operation at AFETR and KSC and the benefits to be derived therefrom.

In separate interviews, officials of both contractors said that (1) consolidation of the operations under a single contract was feasible, (2) separate operations were inefficient and excessively costly because both contractors were staffed and equipped for peak workloads which fluctuate widely, and (3) significant savings could be realized through a single photographic operation. Documentation of the disadvantages of having two contractors provide photographic services and the advantages of having a single contractor operation was provided to us by the contractors. Both of the contractors stated that a consolidated operation could result in a reduction in the manpower requirements and that savings approaching \$2 million a year were conceivable,

Some of the factors cited by the contractors are enumerated below:

1. Photographic support could be provided with less equipment and personnel through the increased efficiency of a consolidated operation. There would be more efficient utilization of manpower and equipment, particularly when tests are scheduled close together.
2. Laboratory facilities at both AFETR and KSC would be unneeded because the facility at AFETR has the capacity to meet both AFETR and KSC requirements.
3. Duplication of effort in planning, supply and transportation, data handling, and management layering could be avoided.

One of the contractors stated that:

"Inefficient use is being made of both manpower and materials in the two separate photographic efforts due to the nature and time-of-occurrence of their respective peak workloads. Peak workloads are experienced by these two facilities in direct relation to the range schedule; and, the range schedule is purposely arranged so that successive missile tests interfere as little as possible. Manpower and materials are therefore not

being **fully** utilized under the present photographic **services** configuration.

"In order to effect **a** more even distribution of workload **and** realize maximum utilization of **man-**power and resources, consideration should be given to the establishment of a single photographic service unit, responsive to **both** the **ETR** **and NASA.**"

This contractor concluded that a single contractor operation not only **would** result in annual savings of **over \$2 million** by reducing manpower, transportation, **and** supply costs but also **would result** in initial savings on equipment of **about \$2 million** through selective cancellation of future procurements, combining resources, **and** declaring equipment **excess** which is not needed to support **the** combined operation,

Conclusion, agency comments,
and our evaluations thereof

Because of the apparent savings involved, we expressed the view in our draft report that the requirements of NASA and DOD organizations could be provided adequately under a consolidated organization and that the possible problems (i.e., coordination and administration) under such an arrangement were not insurmountable provided that both organizations would approach the situation in a spirit of cooperation in the interest of overall economy.

In view of the potential savings that could be realized if the photographic capabilities of the Air Force Eastern Test Range and the Kennedy Space Center were consolidated, we proposed that the Secretary of Defense and the Administrator, National Aeronautics and Space Administration, appoint a special group to review the photographic requirements and capabilities of both installations for the purpose of determining the most efficient and economic arrangement possible, notwithstanding earlier agreements, and that in the review consideration be given to the consolidation of facilities and the solicitation of proposals for the operation of these photographic facilities by one contractor.

In line with our proposal, both agencies agreed to initiate a joint review of the photographic operations at the two installations to determine the most efficient and economic method of acquiring photographic services. In addition, NASA advised us that it would reexamine other support areas with the Air Force in an attempt to obtain both operational responsiveness and economy.

As discussed below, however, the agencies were not in complete agreement with certain of the data presented in our draft report.

Although agreeing that a consolidated photographic operation would be more economical, the Air Force did not concur in our suggestion that consideration be given in the joint review to the solicitation of proposals for the operation of consolidated photographic facilities by one contractor.

The Air Force expressed the view that the same result could be achieved by having one of the present prime contractors furnish all photographic services for both KSC and AFETR without the introduction of a separate prime contractor. The Air Force stated that the prime support contractor at AFETR also was operating all other technical

facilities at that installation **and** that the Air Force wished to avoid fragmenting a well-run responsive contractor operation, not only because of the disruption its related planning functions but also because the operation of other technical facilities by the prime contractor made significant economies possible.

It was not our intention in the draft report to advocate one method or' contracting in preference to other means of resolving the apparent problem of duplication, It was **our** intention to have **the** problem reviewed in depth, free from any unnecessary constraints, in order that various alternatives could be explored with due recognition being given **in** each instance **to** costs and mission requirements. After **consideration** of past approaches to **resolving** this problem, it **was**, and still is, our view **that** NASA and DOD should give **full** consideration to-all alternatives in their joint review,

NASA was of the opinion **that** the table comparing the **annual** production capacity **of** the motion picture laboratories with the actual production for calendar years 1964 through 1966 **was** misleading. NASA stated **that** measuring output against equipment capacity was suitable for a commercial-type operation with long runs and no priority changes; the primary purpose of the laboratories at KSC and AFETR was **to** periodically process large **amounts** of engineering and launch footage on a high-priority basis. According to NASA, there was no requirement for continuous, high-volume output.

NASA stated further that the equipment capacity had, in fact, been inadequate for NASA requirements during three critical post-launch **periods**, According to **NASA**, the short-term capacity of the equipment will be taxed to an even greater extent on future launches.

In analyzing the merits of NASA's **comments**, we made a comparison of short-term capacity and production figures during the **three** critical post-launch periods cited by NASA and found **that**, contrary to **the** views of NASA, actual motion picture laboratory production at AFETR never **ex-**ceeded 25 percent of the **capacity on any one day and** that on most days actual production was less than 10 percent of capacity,

In addition, we have been advised by AFETR officials that, because of a continuing decrease in production, the AFETR photographic processing laboratory **has** converted to a one-shift operation **and has** discontinued **the** use of two motion picture processors, On the basis of the above

information, it appears that there is a substantial unused capability within AFETR to meet future demands.

NASA also indicated that it had encountered problems in obtaining its requirements from AFETR on a timely basis. As an example, it stated that only 5 percent (3 of 64 items) of the film requirements for a launch in August 1966 were processed on time. Our examination of the data provided to us by NASA to support the contention that AFETR had not met the film requirements on time indicated that the 64 items did not relate to the photographic operations discussed in this report.

The apparent discrepancies in facts regarding AFETR's production capacity and response time were discussed with responsible NASA representatives to obtain clarification of its views and to ensure full consideration of its comments in the presentation of our final report on this matter, NASA did not furnish us with any additional pertinent information.

To give further consideration to the merits of its comments on our draft report, we reviewed the photographic work orders processed by the AFETR laboratory for the launch in question in order to determine how well the time requirements were being met. We found that AFETR was able to meet commitments made previously to NASA for 96 percent of the work orders (194 of 202 orders).

With respect to the cost estimates, proposals, and statements of the photographic contractors, it was NASA's view that they should not form the support for our contention that economies are possible because, according to NASA, these contractors did not have detailed knowledge of the total job.

Inasmuch as the contractors are responsible for actually providing the photographic services and should, therefore, be in a position to have some reasonable degree of knowledge as to the problems associated with this activity, we cannot agree that their statements and proposals are without merit as suggested by NASA. Accordingly, other data obtained during our review, when combined with the contractors' views, provide strong arguments in favor of a consolidated operation.

- - - -

The agreement by NASA and DOD to initiate a joint review of the photographic operations of both installations, in line with our proposal, evidences a positive approach toward resolution of the matters discussed in this report. We plan to examine into the actions taken as a result of the joint review.

APPENDIXES

PRINCIPAL OFFICIALS OF THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DEPARTMENT OF DEFENSE AND DEPARTMENT OF THE AIR FORCE
RESPONSIBLE FOR THE ADMINISTRATION
OF ACTIVITIES DISCUSSED
IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<u>NATION L AERONAUTICS AND SPACE ADMINISTRATION</u>		
ADMINISTRATOR:		
James E. Webb	Feb. 1961	Present
DEPUTY ADMINISTRATOR:		
Hugh L. Dryden	Oct. 1958	Dec. 1965
Robert C. Seamans, Jr.	Dec. 1965	Present
ASSOCIATE ADMINISTRATOR:		
Robert C. Seamans, Jr.	Sept. 1960	Sept. 1967
Homer E. Newell	Oct. 1967	Present
ASSOCIATE ADMINISTRATOR FOR MANNED SPACE FLIGHT:		
George E. Mueller	Sept. 1963	Present
DIRECTOR, KENNEDY SPACE CENTER:		
Kurt H. Debus	July 1962	Present

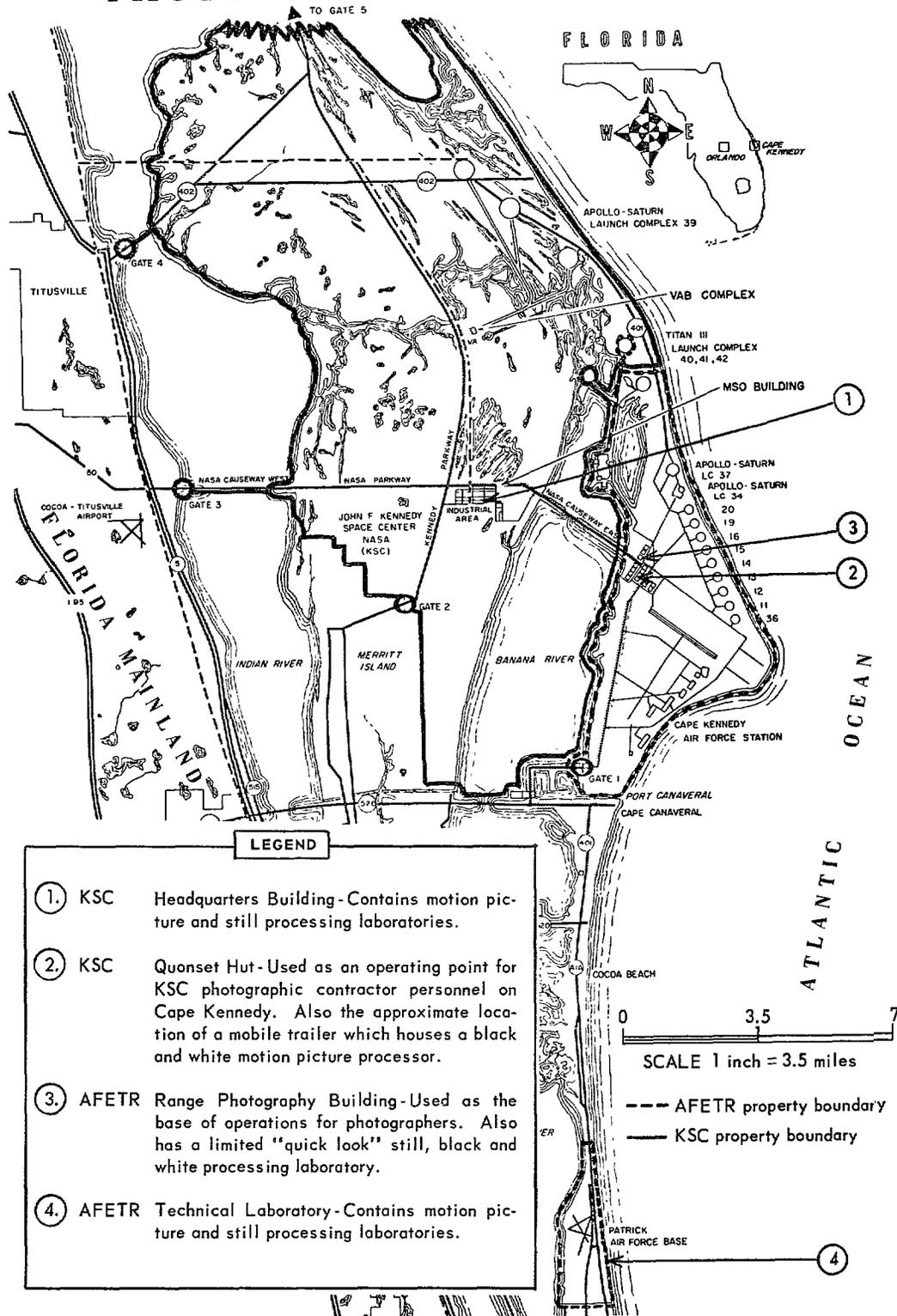
DEPARTMENT OF DEFENSE

SECRETARY OF DEFENSE:		
Robert S. McNamara	Jan. 1961	Present
ASSISTANT SECRETARY OF DEFENSE (INSTALLATIONS AND LOGISTICS) :		
Thomas D. Morris	Jan. 1961	Dec. 1964
Paul R. Ignatius	Dec. 1964	July 1967
Thomas D. Morris	Aug. 1967	Present

PRINCIPAL OFFICIALS OF THE
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DEPARTMENT OF DEFENSE AND DEPARTMENT OF THE AIR FORCE
RESPONSIBLE FOR THE ADMINISTRATION
OF ACTIVITIES DISCUSSED
IN THIS REPORT (continued)

	<u>Tenure of office</u>	
	<u>From</u>	<u>TO</u>
<u>DEPARTMENT OF THE AIR FORCE</u>		
SECRETARY OF THE AIR FORCE:		
Eugene M. Zuckert	Jan. 1961	Sept. 1965
Harold Brown	Oct. 1965	Present
ASSISTANT SECRETARY OF THE AIR FORCE (INSTALLATIONS AND LOGIS- TICS) :		
Robert H. Charles	Nov. 1963	Present
COMMANDER, AIR FORCE SYSTEMS COM- MAND:		
Gen. Bernard A. Schriever	Apr. 1959	Aug. 1966
Gen. James Ferguson	Sept. 1966	Present
COMMANDER, AIR FORCE EASTERN TEST RANGE (formerly Air Force Mis- sile Test Center):		
Maj. Gen. Harry J. Sands, Jr.	Jan. 1964	July 1964
Maj. Gen. Vincent G. Houston	Aug. 1964	Hay 1967
Maj. Gen. David M. Jones	May 1967	Present

MAP SHOWING LOCATION OF PHOTOGRAPHIC FACILITIES





DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
WASHINGTON, D C 20301

27 JUL P967

Mr. William A. Newman, Jr.
Director, Defense Division
U. S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Newman:

Your letter of May 10, 1967, to the Secretary of Defense transmitted copies of a proposed GAO report to the Congress on the opportunity for savings by consolidation of photographic operations at the John F. Kennedy Space Center and Air Force Eastern Test Range, and requested the Department of Defense comments. (OSD Case #2609)

We have no objection to the appointment of a special Department of Defense/National Aeronautics and Space Administration group to review the photographic requirements and capabilities of both installations for the purpose of determining the most efficient and economic arrangement within the framework expressed in the GAO recommendation on page 21 of the report. Accordingly, the Air Force is being requested to initiate appropriate action with NASA.

We appreciate the opportunity to comment on this report. Detailed comments, as prepared by the Air Force are attached.

Sincerely,


John S. Foster, Jr.

Attachment
A/S

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REPORT TO

~~THE~~ CONGRESS OF THE UNITED STATES

ON

OPPORTUNITY FOR SAVINGS BY

CONSOLIDATION OF PHOTOGRAPHIC OPERATIONS

AT THE JOHN F. KENNEDY SPACE CENTER

AND AIR FORCE EASTERN TEST RANGE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

AND DEPARTMENT OF DEFENSE

I. BACKGROUND: (pages 3 through 6). These statements are correct except for manpower and cost figures. These are in error as shown in paragraph III, below.

II. OPPORTUNITY FOR SAVINGS BY CONSOLIDATION OF PHOTOGRAPHIC OPERATIONS: (pages 7 and 8). Subject to the comments set forth in paragraphs VI and VII, the Air Force agrees that consolidation may be more efficient and economical.

III. PERSONNEL AND EQUIPMENT CAPACITY IN EXCESS OF REQUIREMENTS: (pages 8 through 13). AFETR photographic resources are manned and equipped for the peak workloads that occur with each launch. If the inputs to the laboratory remained at this peak, the laboratory production figures would be much higher. This should be clarified in the study so that the production capacity figures set forth on page 9 are not misconstrued. In addition, the AFETR manpower figure should read 317 instead of 340 and the estimated annual cost should be about \$3 million rather than \$4 million (page 11) as of 31 December 1966. Finally, the AFETR and KSC contractor manpower figures are not directly comparable. The KSC figure represents the direct labor of the photographic range operations people only; the AFETR figure includes the indirect labor of photographic staff managers, optical engineers, high echelon quality control personnel, and optical maintenance personnel. The AFETR direct range operations personnel total 235 man-years as compared to the KSC figure of 155. (See GAO note.)

IV. KSC/AFETR EVALUATIONS OF PHOTOGRAPHIC OPERATIONS: (pages 13 through 15). The Air Force concurs in this portion of the draft report. The constraints placed on the ad hoc study team are similar to those that another group would encounter unless it is specifically freed from all prior agreements, including the DOD/NASA 1963 agreement.

GAO note: Differences in the figures presented in our draft report and in the Air Force's response thereto have been reconciled through subsequent discussions with AFETR officials,

APPENDIX III

Page 3

V. OTHER DATA RELATING TO FEASIBILITY OF SINGLE CONTRACTOR OPERATION OF PHOTOGRAPHIC FACILITIES: (pages 15 and 1.6). The Air Force concurs in this portion of the draft report.

VI. UNSOLICITED PROPOSAL TO PROVIDE PHOTOGRAPHIC SERVICES AT A REDUCED COST: (pages 16 through 19). This proposal was carefully considered, but AFETR did not have the authority to consolidate the photographic operations under a single contractor. The KSC and AFETR photographic services are performed through the prime support contractors, and it was not feasible to ask both prime contractors to employ the same photographic subcontractor. It should also be remembered that the prime support contractor at AFETR also operates all other technical facilities at that installation. The economies of this consolidated operation, which employs some 3,000 people at a cost of about \$40 million, outweigh the advantage to be gained by consolidating the photographic services in a separate prime contractor.

VII. LOCAL AGENCY COMMENTS, OUR EVALUATION AND CONCLUSION: (pages 19 and 20). The Air Force agrees with the conclusion that a consolidated photographic operation would be more economical, but feels that nothing in the report justifies separating the photographic from the rest of the prime contractor's responsibilities. As pointed out above, a better consolidation plan would be to have the AFETR or KSC furnish all photographic services for both installations. The Air Force wishes to avoid fragmenting a well-run, responsive contractor operation, not only because of the disruption to related planning functions, but also because such consolidation makes significant economies possible. The KSC has recently consolidated a number of diverse contracts because of its experience with a fragmented contractor operation.

[See GAO note.]

VIII. RECOMMENDATION TO THE SECRETARY OF DEFENSE AND ADMINISTRATOR, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION: (page 21). For the reasons set forth in paragraphs VI and VII above, the Air Force recommends striking the recommendation that consideration be given to soliciting proposals for the operation of KSC and AFETR photographic facilities by one contractor. The same result can be achieved through one of the present prime contractors without the introduction of a separate prime contractor.

It is also recommended that the statement "earlier agreements notwithstanding" be emphasized to assure that no previous agreements, especially the DOD/NASA 1963 agreement, be considered by any reviewing group in arriving at its recommendations (see paragraph IV above).

GAO note: Refers to material contained in draft report but omitted from final report.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

IN REPLY REFER TO:

AUG 2 1967

Mr. Morton E. Henig
Assistant Director
Civil Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Henig:

Attached **are the NASA comments** on your draft report to Congress entitled, "Opportunity for Savings by Consolidation of Photographic Operations of the John F. Kennedy Space Center and Air Force Eastern Test Range, NASA and DOD."

The comments point out areas which we feel should be given more consideration in your analysis of the joint photographic operations. We do, however, agree with the recommendation that NASA and the Air Force restudy the area. We have taken steps to initiate that study and will, through subsequent studies, reinvestigate other support areas with the Air Force in an attempt to obtain both operational responsiveness and economy. A letter from the Associate Administrator for Manned Space Flight to the Director, KSC, outlining these steps is also attached.

Sincerely yours,

A handwritten signature in cursive script, reading "Harold B. Finger".

Harold B. Finger
Associate Administrator for
Organization and Management

Enclosure

NASA COMMENTS OF GAO DRAFT REPORT TO CONGRESS,
OPPORTUNITY FOR SAVINGS BY CONSOLIDATION
OF PHOTOGRAPHIC OPERATIONS AT KSC & ETR

The basic GAO contention is that the personnel and equipment capacity of KSC & ETR is in excess of the combined requirements of both. The method employed by GAO to determine processing equipment utilization was to compare actual output to rated capacity of the machinery. This is misleading. The output of a commercial laboratory, with long runs and no priority changes, could be effectively measured against equipment capacity. The primary purpose of the photo labs at KSC & ETR, however, is to periodically process large amounts of engineering and launch footage on a high priority basis. There is no requirement for continuous, high volume output and no attempt is made to encourage production for production's sake. The equipment capacity, impressive as it is, has, in fact, been inadequate for NASA requirements during the critical post-launch periods on AS 201, 202, and 203. These were launches of vehicles which NASA had built (as opposed to the AF vehicles used in Gemini) and which are to be manned. Our photo requirements for these launches were the precursors of the massive requirements for the manned flights of the uprated Saturn I and the unmanned and manned flights of Saturn V. On these future flights, the short-term capacity of the equipment will be taxed to an even greater extent, but the annual output-to-capacity figures will not be greatly increased.

An example of the problems involved in a joint photo operation-- problems which GAO summarizes as "... certain administrative problems" and "... relatively insignificant..."--was the launch of AS 202 and a quickly-following Titan IIIC launch by the Air Force. The dual requirements were processed by the Air Force with the result that only 5% of the AS 202 film requirements were processed on time and 70% were more than 15 days late. This was not an insignificant problem and was a part of the data distribution problem reported to the DOD Manager for Manned Space Flight Support Operations by the NASA Director of Mission Operations. (Enclosure 1).

NASA has attempted to effectively and economically meet its critical photo support requirements by:

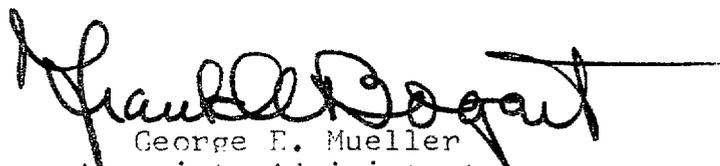
- (1) Bringing delays and deficiencies to ETR's attention (Enclosures 1 and 2).
- (2) Establishing, with ETR knowledge and concurrence, a limited in-house capacity for our most critical needs and aiming for this to become fully operational when the volume of our needs was greatest (AS-501) (Enclosure 3).

GAO note: The enclosures cited in the above comments have not been included in our report because they are voluminous and merely expand upon the statements already made in the comments,

- (3) Reducing photo requirements, wherever possible, (e.g. camera coverage on launch, extra optical masters and prints) (Enclosure 4).

This is not a static area and we intend to keep exploring ways to get the best support at the least cost. In line with these efforts, we concur in the GAO recommendation that a joint study group review the photographic support operations and have advised the Director, KSC, to initiate such a study with the Air Force Eastern Test Range. An adequate study will need to explore how any proposed change in the present two separate contractor structures would affect present launch mission responsibilities, management controls, funding or reimbursement practices, and the procurement recompetition policy guidelines of the two government agencies involved.

On the cost estimates, proposals, and statements made by the two involved subcontractors, we do not feel that they should form the support for GAO's contention that economies are possible. The contractors are making rough estimates, without detailed knowledge of the total job, but with a strong monetary incentive to inflate their estimates of simplicity and economy. GAO, who studied both operations, did not make an estimate of savings and we feel an informed estimate would be very difficult to make because of the relationship of support economies to operational problems. In view of these factors, we believe it is misleading for the GAO to infer that the \$2,000,000 annual savings estimated by one of the subcontractors is a good estimate of the savings which might be achieved. A better understanding of the photographic problem, if indeed a problem exists, will be possible at the conclusion of the new AF/NASA study referred to above.


George E. Mueller
Associate Administrator
for Manned Space Flight

COPY

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546

JUL 13 1967

IN REPLY REFER TO: MSR

Dr. Kurt H. Debus, Director
John F. Kennedy Space Center, NASA
Kennedy Space Center, Florida 32899

Dear Kurt:

Confirming my telephone conversation with you this morning, I would like to have you initiate with the Eastern Test Range a joint study of photographic operations at the Cape. This study should give consideration to the operational factors involved and the cost of performing the operation with a single contractor **as** opposed to the current situation where each installation has its own facilities and contractor. Where operational considerations are determined to be more important than costs, we should be able to tie these considerations directly to actual or potential program delays.

I recognize that this effort could lead to a reevaluation of the Webb-McNamara agreement. With this in mind, I would also like to have you re-examine from a cost and operational viewpoint each of the support areas at KSC where a similar capability exists at ETR. I would appreciate being advised of your schedule (by functional area) for conducting these reviews.

I think it highly desirable that there be some Headquarters participation in these studies and ask that you make arrangements for this participation with Paul Cotton.

Sincerely,

/s/ George

George E. Mueller
Associate Administrator
for Manned Space Flight